

# TRANSVERSE MAGNETIC FIELD VOLTAGE ISOLATOR

## ABSTRACT OF THE DISCLOSURE

An SEM wherein the entire imaging apparatus of the SEM is supported on air  
5 bearings. A multi-stage differentially pumped vacuum seal area provides a localized  
vacuum zone for wafer examination. A wafer leveling mechanism insures that the top  
surface of the wafer being examined is placed and maintained in a position level with the  
surface upon which the air bearing supported SEM rests. The SEM can move on its air  
bearings such that any portion of the wafer can be examined. A voltage-isolating  
10 passageway for providing high voltage isolation between a component maintained at high  
DC voltage and a component maintained at a substantially lower voltage is described.  
The voltage-isolating passageway incorporates a transverse magnetic field across its  
passageway. The voltage-isolating passageway includes at least two magnets that are  
positioned along opposite and exterior surfaces of the passageway. A semi-conductive  
15 coating can be applied to the interior passageway surface.